Modification of Commercial Polyethersulfone Membranes

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Polyethersulfone is a widely used ultrafiltration membrane material thank to its good film-forming and membrane-forming properties, thermal stability, chemical inertness, and mechanical strength. Polyethersulfone membranes find a range of applications in food processing [1], biomedical field [2], and water-treatment technologies [3]. However, the hydrophobic nature of polyethersulfone brings a challenge of higher fouling propensity of these membranes.

In the presented work commercial polyethersulfone membranes have been surface-grafted with a hydrophilic polymer. The membranes were activated by a heterogeneous reaction introducing benzyl chloride functionality from which surface-initiated atom transfer radical polymerization was conducted (Figure 1) [4]. It has been shown that the graft density and chain length of the surface polymer graft can be controlled.

These results in combination with versatility of the used polymerization technique offer a tool to tailor the surface properties of commercial polyethersulfone membranes and open up for a wider range of their application.

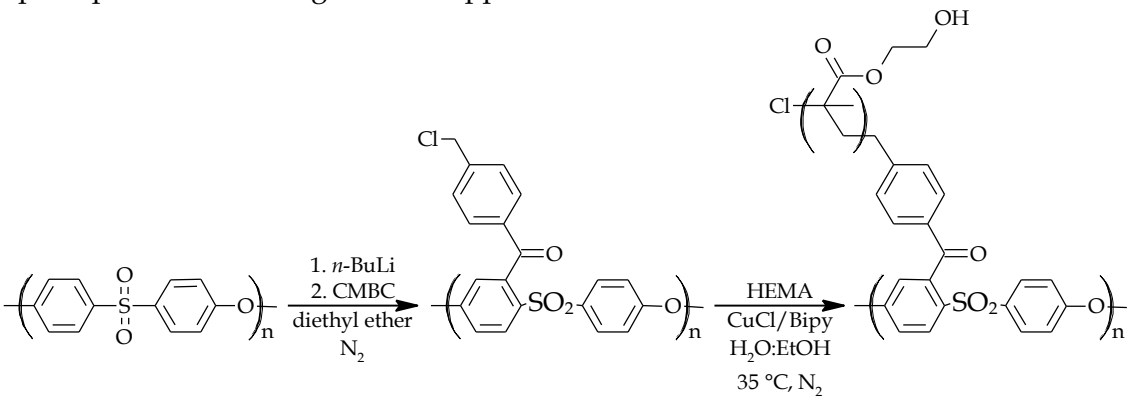

Figure 1: Heterogeneous activation reaction of a commercial polyethersulfone membrane followed by grafting of a hydrophilic polymer via surface-initiated atom transfer radical polymerization.

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